

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents
United States Patent and Trademark
Office
Box PCT
Washington, D.C. 20231
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 04 October 2000 (04.10.00)	Applicant's or agent's file reference 701492 PCT
International application No. PCT/CA00/00128	Priority date (day/month/year) 10 February 1999 (10.02.99)
International filing date (day/month/year) 10 February 2000 (10.02.00)	
Applicant FOLINO, Salvatore, J. et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
31 August 2000 (31.08.00)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

<p>The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland</p> <p>Facsimile No.: (41-22) 740.14.35</p>	<p>Authorized officer F. Baechler</p> <p>Telephone No.: (41-22) 338.83.38</p>
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PATENT COOPERATION TREATY

MACDONALD INTERNATIONAL INC.
MARK DEPARTMENT
RECEIVED

MAR 06 2001

DOCKETED 701492 PCT
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From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

IMAI, Jeffery T.
Magna International Inc.
337 Magna Drive
Aurora, Ontario L4G 7K1
CANADA

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT Rule 71.1)

Date of mailing
(day/month/year) 27.02.2001

Applicant's or agent's file reference
701492 PCT

IMPORTANT NOTIFICATION

International application No.
PCT/CA00/00128

International filing date (day/month/year)
10/02/2000

Priority date (day/month/year)
10/02/1999

Applicant
TESMA INTERNATIONAL INC. et al.


1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/

 European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0 Tx: 523556 epmu d
Fax: +49 89 2399 - 4465

Authorized officer

Filus, S

Tel. +49 89 2399-8241





PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 701492 PCT		FOR FURTHER ACTION		See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)
International application No. PCT/CA00/00128		International filing date (day/month/year) 10/02/2000	Priority date (day/month/year) 10/02/1999	
International Patent Classification (IPC) or national classification and IPC B23P19/08				
Applicant TESMA INTERNATIONAL INC. et al.				
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of sheets.</p>				
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> I <input checked="" type="checkbox"/> Basis of the report II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input checked="" type="checkbox"/> Certain defects in the international application VIII <input checked="" type="checkbox"/> Certain observations on the international application 				
Date of submission of the demand 31/08/2000		Date of completion of this report 27.02.2001		
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80299 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized officer Watson, S Telephone No. +49 89 2399 2840 		

Form PCT/PEA/409 (cover sheet) (January 1994)

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/CA00/00128

I. Basis of the report

1. This report has been drawn on the basis of *(substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments (Rules 70.16 and 70.17).)*:

Description, pages:

1-9 as originally filed

Claims, No.:

1-20 as originally filed

Drawings, sheets:

1/10-10/10 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/CA00/00128

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):
(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims 1-20 No: Claims
Inventive step (IS)	Yes: Claims 1-20 No: Claims
Industrial applicability (IA)	Yes: Claims 1-20 No: Claims

2. Citations and explanations
see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/CA00/00128

V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

- 1.1 The subject-matter of claim 1 is considered to be new as none of the available prior art shows a method for applying an elastomeric gasket to a part having a channel extending into a face thereof for receiving and at least frictionally engaging said gasket with the features of a gasket carrier having a convexly curved surface with a groove for receiving a base of said gasket and transferring the gasket using relative rocking movement between the gasket carrier and the part.
- 1.2 The subject-matter of claim 5 is also considered to be new as none of the available prior art shows an apparatus for applying an elastomeric gasket to a part having a channel extending into a face thereof for receiving and at least frictionally engaging said gasket, where the apparatus includes a gasket carrier with a convexly curved surface.
- 2.1 The closest prior art is taken as being that described in the description on page 1, lines 20-25. This describes a method for applying an elastomeric gasket to a part having a channel extending into a face thereof for receiving and at least frictionally engaging said gasket, the method including the steps of obtaining a gasket carrier with a groove for receiving a base of said gasket; placing said base of said gasket in said groove; juxtaposing said face of said part and said gasket carrier with said gasket aligned with said channel; moving said part and gasket carrier toward each other to transfer gasket to said channel; and, separating said part and said gasket carrier.

The subject-matter of claim 1 differs from this method in that the gasket carrier has a convexly curved surface with a groove and that the gasket is transferred to the part through a relative rocking movement between the part and the gasket carrier.

The problem to be solved by the invention is considered to be to provide a method for applying a gasket to a part whereby the gasket does not tend to slip out of the channel during installation due to trapped air.

The solution proposed in claim 1 is considered to be inventive as it is not suggested by the prior art to provide a curved surface gasket carrier and to transfer the gasket by using a relative rocking movement between the gasket carrier and part.

- 2.2 The subject-matter of claim 5 is also considered inventive. The apparatus defined in claim 5 differs from the closest prior art (as described on page 1 of the description) in that the gasket carrier has a convexly curved surface with a groove for receiving the gasket. It is not known from the available prior art to provide a gasket carrier with a convexly curved surface.
3. Claims 2-4 and claims 6-20, are respectively dependent on claims 1 and 5 and as such also fulfil the requirements of the PCT with regard to novelty and inventive step.

VII Certain defects in the international application

1. The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).
2. A document reflecting the prior art described on page 1 (lines 20-25), is not identified in the description (Rule 5.1(a)(ii) PCT).

VIII Certain observations on the international application

1. Some of the features in the apparatus claim 5 relate to a method of using the apparatus rather than clearly defining the apparatus in terms of its technical features. The intended limitations are therefore not clear from this claim, contrary to the requirements of Article 6 PCT.
In particular, the term, "said groove registering with said channel to feed said gasket into said channel in response to relative rocking movement between said part and said surface", does not clearly define structural features of the apparatus and therefore leaves the scope of the claim unclear.

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

PCT

To:
MAGNA INTERNATIONAL INC.
Attn. IMAI, Jeffery T.
337 Magna Drive
Aurora, Ontario L4G 7K1
CANADA

MAGNA INTERNATIONAL INC.
 PATENT DEPARTMENT
 RECEIVED

JUN 16 2000

DECKETED

701492

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT OR THE DECLARATION

(PCT Rule 44.1)

Applicant's or agent's file reference 701492 PCT	Date of mailing (day/month/year) 07/06/2000
International application No. PCT/CA 00/00128	International filing date (day/month/year) 10/02/2000
Applicant TESMA INTERNATIONAL INC. et al.	

1. ☒ The applicant is hereby notified that the International Search Report has been established and is transmitted herewith.

Filing of amendments and statement under Article 18:

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

When? The time limit for filing such amendments is normally 2 months from the date of transmittal of the International Search Report; however, for more details, see the notes on the accompanying sheet.

Where? Directly to the International Bureau of WIPO
 34, chemin des Colombettes
 1211 Geneva 20, Switzerland
 Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no International Search Report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Further action(s):** The applicant is reminded of the following:

Shortly after 18 months from the priority date, the International application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the International application, or of the priority claim, must reach the International Bureau as provided in Rules 90b/s.1 and 90b/s.3, respectively, before the completion of the technical preparations for International publication.

Within 19 months from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

Within 20 months from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

Name and mailing address of the International Searching Authority European Patent Office, P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Germaine Moet
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NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the PCT Applicant's Guide, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When?

Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How?

Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

NOTES TO FORM PCT/ISA/220 (continued)

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

"Statement under article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

It must be in the language in which the international application is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the same time of filing the amendments with the International Bureau, also file a copy of such amendments with the International Preliminary Examining Authority (see Rule 62.2(a), first sentence).

Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, where upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see Volume II of the PCT Applicant's Guide.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 701492 PCT	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/CA 00/ 00128	International filing date (day/month/year) 10/02/2000	(Earliest) Priority Date (day/month/year) 10/02/1999
Applicant TESMA INTERNATIONAL INC. et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (see Box II).

4. With regard to the title,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☐ the text is approved as submitted by the applicant.

☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

1 _____
☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CA 00/00128

Box III TEXT OF THE ABSTRACT (Continuation of Item 5 of the first sheet)

The abstract is modified as follows:

line 1: after "apparatus" insert "(50)";
line 1: after "gasket" insert "(32)";
line 1: after "channel" insert "(28)";
line 1: after "part" insert "(20)";
line 2: after "carrier" insert "(66)";
line 2: after "groove" insert "(78)";
line 3: after "base" insert "(34)".

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B23P19/08 F16J15/06 F16J15/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B23P F16J B25B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 37 10 651 A (FRAUNHOFER GES FORSCHUNG) 10 March 1988 (1988-03-10) abstract figures 1,2	1,5
A	PATENT ABSTRACTS OF JAPAN vol. 1997, no. 11, 28 November 1997 (1997-11-28) & JP 09 192950 A (NISSAN MOTOR CO LTD), 29 July 1997 (1997-07-29) abstract	1,5,6
A	PATENT ABSTRACTS OF JAPAN vol. 1995, no. 09, 31 October 1995 (1995-10-31) & JP 07 156026 A (NISSAN MOTOR CO LTD), 20 June 1995 (1995-06-20) abstract	1,5,6
-/-		

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- "&" document member of the same patent family

Date of the actual completion of the international search

25 May 2000

Date of mailing of the international search report

07/06/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax (+31-70) 340-3016

Authorized officer

Van Wel, O

INTERNATIONAL SEARCH REPORT

International Application No

PCT/CA 00/00128

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>PATENT ABSTRACTS OF JAPAN vol. 1995, no. 09, 31 October 1995 (1995-10-31) & JP 07 156027 A (NISSAN MOTOR CO LTD), 20 June 1995 (1995-06-20) abstract</p>	1,5,6

INTERNATIONAL SEARCH REPORT
Information on patent family members

International Application No
PCT/CA 00/00128

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 3710651 A	10-03-1988	NONE	
JP 09192950 A	29-07-1997	NONE	
JP 07156026 A	20-06-1995	NONE	
JP 07156027 A	20-06-1995	NONE	

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
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AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
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BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
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CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakhstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

PATENT COOPERATION TREATY

PCT

REC'D 01 MAR 2001

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

2

Applicant's or agent's file reference 701492 PCT	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/CA00/00128	International filing date (day/month/year) 10/02/2000	Priority date (day/month/year) 10/02/1999
International Patent Classification (IPC) or national classification and IPC B23P19/08		
Applicant TESMA INTERNATIONAL INC. et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 5 sheets, including this cover sheet.

- ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 31/08/2000	Date of completion of this report 27.02.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Watson, S Telephone No. +49 89 2399 2840 

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/CA00/00128

I. Basis of the report

1. This report has been drawn on the basis of *(substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments (Rules 70.16 and 70.17).):*

Description, pages:

1-9 as originally filed

Claims, No.:

1-20 as originally filed

Drawings, sheets:

1/10-10/10 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/CA00/00128

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims 1-20
	No: Claims
Inventive step (IS)	Yes: Claims 1-20
	No: Claims
Industrial applicability (IA)	Yes: Claims 1-20
	No: Claims

2. Citations and explanations
see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/CA00/00128

V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

- 1.1 The subject-matter of claim 1 is considered to be new as none of the available prior art shows a method for applying an elastomeric gasket to a part having a channel extending into a face thereof for receiving and at least frictionally engaging said gasket with the features of a gasket carrier having a convexly curved surface with a groove for receiving a base of said gasket and transferring the gasket using relative rocking movement between the gasket carrier and the part.
- 1.2 The subject-matter of claim 5 is also considered to be new as none of the available prior art shows an apparatus for applying an elastomeric gasket to a part having a channel extending into a face thereof for receiving and at least frictionally engaging said gasket, where the apparatus includes a gasket carrier with a convexly curved surface.
- 2.1 The closest prior art is taken as being that described in the description on page 1, lines 20-25. This describes a method for applying an elastomeric gasket to a part having a channel extending into a face thereof for receiving and at least frictionally engaging said gasket, the method including the steps of obtaining a gasket carrier with a groove for receiving a base of said gasket; placing said base of said gasket in said groove; juxtaposing said face of said part and said gasket carrier with said gasket aligned with said channel; moving said part and gasket carrier toward each other to transfer gasket to said channel; and, separating said part and said gasket carrier.

The subject-matter of claim 1 differs from this method in that the gasket carrier has a convexly curved surface with a groove and that the gasket is transferred to the part through a relative rocking movement between the part and the gasket carrier.

The problem to be solved by the invention is considered to be to provide a method for applying a gasket to a part whereby the gasket does not tend to slip out of the channel during installation due to trapped air.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/CA00/00128

The solution proposed in claim 1 is considered to be inventive as it is not suggested by the prior art to provide a curved surface gasket carrier and to transfer the gasket by using a relative rocking movement between the gasket carrier and part.

- 2.2 The subject-matter of claim 5 is also considered inventive. The apparatus defined in claim 5 differs from the closest prior art (as described on page 1 of the description) in that the gasket carrier has a convexly curved surface with a groove for receiving the gasket. It is not known from the available prior art to provide a gasket carrier with a convexly curved surface.
3. Claims 2-4 and claims 6-20, are respectively dependent on claims 1 and 5 and as such also fulfil the requirements of the PCT with regard to novelty and inventive step.

VII Certain defects in the international application

1. The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).
2. A document reflecting the prior art described on page 1 (lines 20-25), is not identified in the description (Rule 5.1(a)(ii) PCT).

VIII Certain observations on the international application

1. Some of the features in the apparatus claim 5 relate to a method of using the apparatus rather than clearly defining the apparatus in terms of its technical features. The intended limitations are therefore not clear from this claim, contrary to the requirements of Article 6 PCT.
In particular, the term, "said groove registering with said channel to feed said gasket into said channel in response to relative rocking movement between said part and said surface", does not clearly define structural features of the apparatus and therefore leaves the scope of the claim unclear.

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 701492 PCT	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/CA 00/ 00128	International filing date (day/month/year) 10/02/2000	(Earliest) Priority Date (day/month/year) 10/02/1999
Applicant TESMA INTERNATIONAL INC. et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.



It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.



the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:



contained in the international application in written form.



filed together with the international application in computer readable form.



furnished subsequently to this Authority in written form.



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the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.



the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of Invention is lacking (see Box II).

4. With regard to the title,



the text is approved as submitted by the applicant.



the text has been established by this Authority to read as follows:

5. With regard to the abstract,



the text is approved as submitted by the applicant.



the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawing to be published with the abstract is Figure No.



as suggested by the applicant.



because the applicant failed to suggest a figure.



because this figure better characterizes the invention.

1



Non of the figures.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CA 00/00128

Box III TEXT OF THE ABSTRACT (Continuation of item 5 of the first sheet)

The abstract is modified as follows:

line 1: after "apparatus" insert "(50)";
line 1: after "gasket" insert "(32)";
line 1: after "channel" insert "(28)";
line 1: after "part" insert "(20)";
line 2: after "carrier" insert "(66)";
line 2: after "groove" insert "(78)";
line 3: after "base" insert "(34)".

INTERNATIONAL SEARCH REPORT

National Application No

PCT/CA 00/00128

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B23P19/08 F16J15/06 F16J15/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B23P F16J B25B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 37 10 651 A (FRAUNHOFER GES FORSCHUNG) 10 March 1988 (1988-03-10) abstract figures 1,2	1,5
A	PATENT ABSTRACTS OF JAPAN vol. 1997, no. 11, 28 November 1997 (1997-11-28) & JP 09 192950 A (NISSAN MOTOR CO LTD), 29 July 1997 (1997-07-29) abstract	1,5,6
A	PATENT ABSTRACTS OF JAPAN vol. 1995, no. 09, 31 October 1995 (1995-10-31) & JP 07 156026 A (NISSAN MOTOR CO LTD), 20 June 1995 (1995-06-20) abstract	1,5,6
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Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

25 May 2000

Date of mailing of the international search report

07/06/2000

Name and mailing address of the ISA

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Authorized officer

Van Wel, O

INTERNATIONAL SEARCH REPORT

International Application No
PCT/CA 00/00128

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>PATENT ABSTRACTS OF JAPAN vol. 1995, no. 09, 31 October 1995 (1995-10-31) & JP 07 156027 A (NISSAN MOTOR CO LTD), 20 June 1995 (1995-06-20) abstract</p> <p>-----</p>	1, 5, 6

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/CA 00/00128

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 3710651 A	10-03-1988	NONE	
JP 09192950 A	29-07-1997	NONE	
JP 07156026 A	20-06-1995	NONE	
JP 07156027 A	20-06-1995	NONE	

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ :

B23P 19/08, F16J 15/06, 15/02

A1

(11) International Publication Number:

WO 00/47364

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(30) Priority Data:

60/119,390

10 February 1999 (10.02.99)

US

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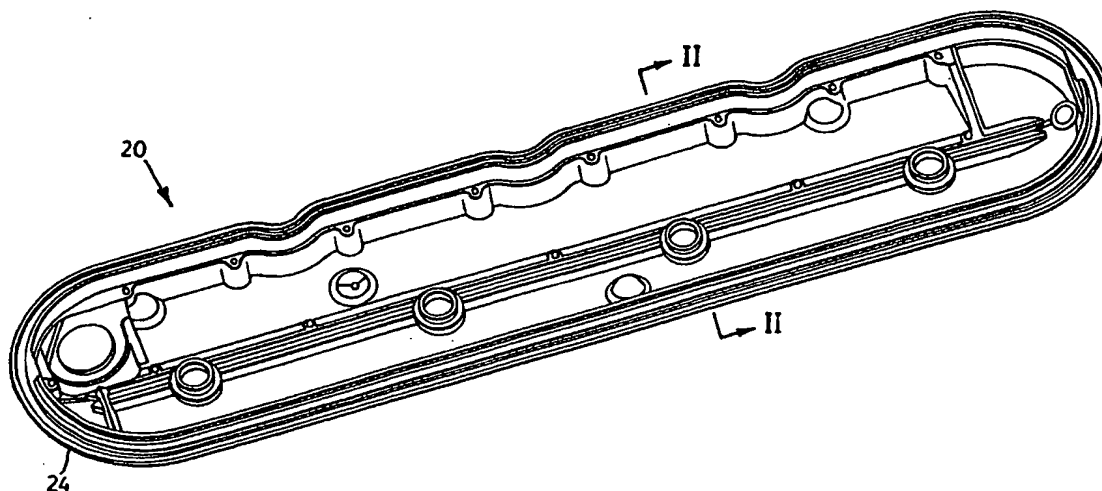
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(81) Designated States: CA, MX, US.

Published*With international search report.**Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.*

(54) Title: GASKET INSTALLATION APPARATUS



(57) Abstract

An apparatus (50) and method for inserting a gasket (32) into a channel (28) of a mating part (20). The apparatus includes a gasket carrier (66) having a convexly curved surface with a groove (78) therein for receiving a base (34) of the gasket. The groove registers with the channel to feed the gasket into the channel in response to relative rocking movement between the part and the surface. According to the method, a gasket is placed in the groove and the gasket carrier is juxtaposed with the part to align the gasket with the channel. The part and the gasket carrier are moved toward each other for a portion of the gasket to enter the channel. A relative rocking movement is caused between the part and the gasket carrier to transfer the remainder of the gasket to the channel.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

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GASKET INSTALLATION APPARATUS

Field of the Invention

This invention relates to an apparatus for installing gaskets. In particular, this invention relates to an apparatus for installing an elastomeric gasket into a channel on a
5 component.

Background of the Invention

In an automobile engine, it is common to use an endless gasket between mating parts such as a valve cover and a cylinder head. An endless channel is provided on one or both of
10 the mating surfaces to receive and retain an endless gasket. The gasket is inserted into the channel before final assembly of the valve cover to the cylinder head.

Installation of gaskets into the endless channel can pose many problems. Traditionally, an operator starts the installation of the gasket by placing the gasket over the channel. Next, the operator starts pressing the gasket into the channel. The operator must
15 ensure that the insertion of the gasket is even. However, due to the elastomeric nature of the gasket, the operator commonly "chases" the gasket, as previously inserted portions of the gasket pop out of the channel as the uninstalled portions of the gasket are being inserted. Further, slight stretching of the gasket during installation can result in misalignment of the gasket within the channel.

20 It is known in the art to provide a flat gasket carrier which releasably receives a gasket for insertion into the endless channel. The endless channel is aligned with the gasket and direct pressure is applied to the gasket carrier to insert the gasket into the channel. However, a slight misalignment of the part with the gasket causes any misaligned portions of the gasket to buckle and remain uninserted. Furthermore, air gets trapped between the gasket and the
25 channel and tends to push the gasket out of the channel upon removal of the installation force.

Various gasket installation and assembly procedures have been proposed in the prior art. A simple approach, disclosed in U.S. Pat. No. 4,101,138, uses friction to seat an elastomeric gasket, and locating pins integral to the gasket that are slightly larger than the mating holes on the engine part, so that the gasket is force fitted into place during engine part
30 assembly. However, no provision is made for avoiding misalignment during initial installation of the gasket.

U.S. Pat. No. 5,634,644 employs a two part elastomeric gasket whereby the mating metal part is subjected to induction heating and one section of the gasket is melted and glued into place. Disadvantages to this approach include the need for additional induction heating apparatus, and the requirement of a complicated gasket design whereby the two gasket sections have different compositions but complementary shapes that snap fit together.

5 Similarly, U.S. Pat. No. 5,513,855 also employs a multi-section gasket, but with a far more complicated design, with three metal plates sandwiched together with engaging tabs that bend against a dowel or bolt when the gasket is placed on an engine cylinder block. U.S. Pat. No. 4,783,087 employs an insert with deformable tabs that engage the gasket. U.S. Pat. No. 4,730,836 also uses an insert with barbs that deform when a retaining bolt is tightened. All of
10 these designs require complicated gasket designs with deformable metal or plastic tabs that frictionally engage an engine part, and are not applicable to the installation of simple elastomeric gaskets into an endless channel prior to final assembly of mating parts.

Summary of the Invention

15 A method is provided for applying an elastomeric gasket to a part having a channel extending into a face thereof for receiving and at least frictionally engaging said gasket, said method comprising the steps of:

- i) obtaining a gasket carrier having a convexly curved surface with a groove for receiving a base of said gasket, said groove being registrable with said channel;
- 20 ii) placing said base of said gasket in said groove;
- iii) juxtaposing said face of said part and said gasket carrier with said gasket aligned with said channel;
- iv) moving said part and said gasket carrier toward each other for a portion of said gasket to enter said channel;
- 25 v) causing a relative rocking movement between said part and said gasket carrier to transfer a remainder of said gasket to said channel; and,
- vi) separating said part and said gasket carrier.

According to one embodiment of the present invention, the part may be held stationary
30 in step iv) and the arched surface with the gasket thereon moved toward the part and in step

v), the part may be held stationary and the relative rocking movement carried out by the gasket carrier.

An apparatus is also provided for applying an elastomeric gasket to a part having a channel extending into a face thereof for receiving and at least frictionally engaging the gasket. The apparatus has a gasket carrier with a convexly curved surface with a groove
5 therein for receiving a base of the gasket. The groove registers with the channel to feed the gasket into the channel in response to relative rocking movement between the part and the surface. The apparatus may include a part holder for grasping the part and presenting the channel to the gasket carrier.

The apparatus may also include a driver operably connected to at least one of the part
10 holder and the gasket carrier for effecting the relative rocking movement. The driver may be connected to the gasket carrier.

The part holder may include an opening for receiving the part and an inwardly extending flange extending at least part way around the opening for abutting against the base of the part outboard of the channel to support the part within the opening. At least one
15 clamping member may be provided which is moveable between a load position allowing placement and removal of the part within the opening, and a hold position engaging the part to hold the part within the opening end against the flange.

The driver may include a platen moveable in a longitudinal direction toward and away from the part holder, a base plate rockingly coupled to the platen for supporting the gasket
20 carrier, and a connector for connecting the gasket carrier to the base plate. First positioning means may be connected to the platen for moving the platen in the longitudinal direction. A rocker may act between the base plate and the platen for causing the base plate and in turn the gasket carrier to effect the rocking movement relative to the part holder.

The rocker may include first and second cam plates extending from the platen
25 respectively toward first and second ends of the platen. The first and second cam plates may have respective first and second cam surfaces engaged by respective first and second cam followers connected to the base plate. The first and second cam surfaces may be profiled to allow opposite relative longitudinal movement of the first and second ends of the base plate while restraining lateral movement. An arched guide may be secured to and extend laterally
30 across the base plate, the arched guide having a curvature complementary to the curved

surface. A slider may be provided which is slidable along the guide by a slider positioning means acting between the slider and the platen to laterally position the slider relative to the guide. The slider may act in conjunction with the first and second cam plates and the first and second cam followers to translate lateral movement of the slider to the rocking movement of the gasket carrier.

- 5 The gasket carrier may be slidably connected to the base plate for lateral movement relative to the part holder. The apparatus may further include a second positioning means acting between the platen and the base plate to laterally slide the platen clear of the part holder for placement of the gasket in the groove.

The first and second positioning means may be fluid pressure responsive cylinders.

10

Brief Description of the Drawings

Presently preferred embodiments of the invention will now be described, by way of example only, with reference to the attached figures wherein:

- 15 **Figure 1** is a perspective view of an engine valve cover;
 Figure 2 is a section view through line II-II in Figure 1;
 Figure 3 is an elevational view of an engine valve cover gasket;
 Figure 4 is a section view through line IV-IV of the gasket shown in Figure 3;
 Figure 5 is a front elevational view of a gasket assembly station;
 Figure 6 is a perspective view of gasket assembly machinery within the station
20 shown in Figure 5;
 Figure 7 is a partial rear perspective view of the gasket assembly station shown
 in Figure 6;
 Figure 8 is a front elevational view of the gasket assembly station as shown in
 Figure 6;
25 **Figure 9** is a front elevational view of the gasket assembly station shown in
 Figure 6 with the gasket carrier in engagement with the first end of the
 valve cover of Figure 1;
 Figure 10 is a front elevational view of the gasket assembly station shown in
 Figure 8 with the gasket carrier in engagement with the centre of the
30 valve cover;

Figure 11 is a front elevational view of the gasket assembly station shown in Figure 9 with the gasket carrier in engagement with the opposite end of the valve cover; and

Figure 12 is a section view through line XII-XII in Figure 10.

5 Detailed Description of the Drawings

Referring to Figures 1 and 2, a part such as a valve or a cam cover for covering a cylinder head of an automobile engine is indicated generally at 20. Valve cover 20 is conventional in the art and is generally concave with a sealing surface 24 extending about the periphery of the valve cover 20. As illustrated in Figure 2, sealing surface 24 has a channel
10 28 for receiving a gasket. Although a valve or cam cover is illustrated and described herein, it will be appreciated that this invention has general applicability to other parts, automotive or otherwise in which an elastomeric gasket is to be installed in a channel.

Referring now to Figures 3 and 4, a gasket 32 for sealing between valve cover 20 and the cylinder head of the automobile engine is illustrated. Gasket 32 is flexible and preferably
15 formed from silicone or a silicone based composition. It is to be understood that gasket 32 can be formed from other elastomeric materials. As best seen in Figure 4, gasket 32 may have a uniform cross section comprising a generally key-hole shape. However other shapes, such as a simple "O" ring gasket may also be installed according to the present invention. The key-hole shape has a bulbous base portion 34, an insertion flange 36 and a lateral flange 38.
20 Insertion flange 36 is sized to friction fit within channel 28. To assist in the friction fit, lateral flange 38 impinges on the inner surface of channel 28, thus ensuring retention of insertion flange 36 within channel 28. Bulbous portion 34 presents a sealing bead about the periphery of the valve cover 20 for sealing engagement with a mating surface such as a cylinder head.

Figure 5 shows a first embodiment of a gasket installation apparatus in accordance
25 with the present invention, indicated generally at 50, for installing gasket 32 into valve cover 20. Apparatus 50 comprises a base 54 on which a structural frame 58 having frame members defining a parallelepiped structure is mounted. A part holder 62 is mounted to frame 58 and suspended over a gasket carrier 66 and a driver or gasket applicator 70.

Part holder 62 will now be described with reference to Figures 6 and 12. Part holder
30 62 comprises a plate 71 and swing clamps 72. Plate 71 is affixed to opposite sides of frame

58. Plate 71 has an opening 76 for receiving valve cover 20. A flange 73 extends inwardly about the inner periphery of opening 76 to support the outer periphery of cover 20 in a channel-side down condition. The flange 73 engages cover 20 without interfering with or obstructing channel 28. The flange 73 need not be continuous. Clamps 72 are pivotally mounted and swing over the opening 76, so as to clamp cover 20 between the clamps 72 and the flange 73 thereby securely retaining cover 20 within opening 76. Preferably, swing clamps 72 are pneumatically-driven, and are movable between a release position and a hold position as shown by arrow A in Figure 6.

Gasket carrier 66 will now be described with reference to Figures 6-11. Gasket carrier 66 is a curved plate having a groove 78 on the convex surface thereof. Groove 78 has the same general outline as the channel 28 so as to register therewith and is complementary to the base portion 34 of the gasket 32. The groove 78 receives the base portion 34 so as to present insertion flange 36 toward channel 28. As best seen in Figure 9, the curvature of carrier 66 provides an angle of α between a line tangent to a centre 80 and a line tangent to a first end 82, and an angle of β between a line tangent to centre 80 and a line tangent to second end 84. α and β can be in the range from about 11° to about 22°. Preferably, α and β should be in the range of from about 12° to about 19°. However, the preferred embodiment has α = about 14° and β = about 14°. It will be understood that other curvatures can be provided which will facilitate the insertion of the gasket, and that α need not be equal to β , and that the exact curvature used will depend on the particular geometry of the part and gasket to be installed.

Gasket applicator 70 will now be described with reference to Figures 6-10. As will now be apparent to those of skill in the art, gasket applicator 70 attaches to gasket carrier 66 and provides a means to insert gasket 32 into groove 78 by rocking gasket carrier 66 along channel 28. As best seen in Figure 6, gasket applicator 70 interfaces with carrier 66 via a base plate 88 to which gasket carrier 66 is slidably mounted. A pair of runners 92 mounted to the bottom of carrier 66 slidably grasp a pair of rails 94 affixed to base plate 88. Drive cylinder 98 is affixed to base plate 88 and the gasket carrier 66 so as to act between the platform 88 and the carrier 66. The drive cylinder 98 acts as a second positioning means to effect transverse movement of the gasket carrier 66 as indicated by arrow B. Gasket carrier 66 can be placed in a load position transversely distal from plate 71 (best seen in Figure 6), to a ready position such that gasket carrier 66 aligns with opening 76 (best seen in Figures 9-11). Base plate 88

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includes a depending carrier base 90 and is mounted to a platen 129 in such a manner that base plate 88 carrier, base 90 and carrier 66 can pivot about a transverse axis as indicated by arrow C, and slide longitudinally as indicated by arrow D.

Referring now to figures 6-11, first and second cam plates 113 are mounted on opposite ends of the platen 129. A drive cylinder 119 mounted to frame 58 moves between a retracted position and an extended position to act as a slider positioning means to effect guided movement of the carrier base 90. Pins 118, 120 are integral with and project from carrier base 90 in a vertical direction. Guide slots 114, 116 are generally "J" shaped slots which are canted away from each other. Guide slots 114, 116 act as cam surfaces and receive pins 118, 120 which act as cam followers and cooperate with drive cylinder 119 to direct the pivotal movement of gasket carrier 66.

As best seen in Figure 7, the rear face of base plate 88 has an arcuate rail 124 similar to rails 94. Arcuate rail 124 has a curvature that is generally coincident with the curvature of gasket carrier 66 and acts as a guide for a slider 126 which, similar to runners 92, is affixed to the end of cylinder 119 and slidably grasps arcuate rail 124 for slidable movement therealong. On the underside of carrier base 90 is a second rail 128, also similar to rails 94, mounted to platen 129. A second runner 130, also similar to runners 92, is also affixed to the end of cylinder 119 underneath runner 126. Second runner 130 slidably grasps rail 128 for slidable movement therealong.

Referring now to Figures 8-11, platen 129 is slidably mounted on frame 58 by runners 102 which slidably grasp rails 106. Lift cylinder 110 is mounted to base 54 and is operatively connected to pedestal 129, and acts as a first positioning means to effect movement of pedestal 129 between a lowered position and a gasket application position. The lowered position is best seen in Figure 8, while Figures 9-10 show the gasket application position. As best seen in Figure 9, in its retracted position cylinder 119 urges base 90 longitudinally such that pin 118 is in the curved end of guide slot 114, and pin 120 is in the straight end of guide slot 116. Accordingly, platform 88 is tilted such that first end 82 of gasket carrier 66 engages valve cover 20.

As shown in Figure 10, as cylinder 119 extends pins 118, 120 will be guided by guide slots 114, 116 and will move platform 88 and gasket carrier 66 in an arcuate motion.

Accordingly, gasket carrier 66 will “rock” along a point of contact between gasket carrier 66 and valve cover 20. In other words, a single point of tangential contact will translate along.

As shown in Figure 11, in the extended position cylinder 119 urges the platform such that pins 118, 120 will move to the opposite ends of guide slots 114, 116. Accordingly, platform 88 is canted such that second end 84 of gasket carrier 66 engages valve cover 20.

5 The operation of the present embodiment will now be explained with reference to the foregoing and Figures 1-12. Gasket carrier 66 is in the load position as illustrated in Figure 6, laterally clear of part holder 62. An operator places valve cover 20 into opening 76, such that the periphery of cover 20 rests on the flange 73. The operator places gasket 32 into groove 78 such that bulbous portion 34 is releasably received within groove 78, and insertion
10 flange 36 is presented upwardly.

The operator then moves outside of frame 58 and actuates the start of a sequence of automatic operations in apparatus 50 through any suitable actuation means such as a pair of push buttons connected in a series which provide a signal to a controller unit such as programmable logic controller (PLC). It will be understood that other actuation means and
15 controller units can be provided, and that such variations do not depart from the scope of the present invention.

The controller unit then executes the following sequence of events to install gasket 32 into the channel 28 of cover 20. First, swing clamps 72 are actuated to move to the hold position to secure cover 20 within part holder 62. Next, cylinder 98 is extended to move
20 carrier 66 from the load position into the ready position so as to align the gasket 32 with channel 28 of cover 20. Next, lift cylinder 110 is extended from the lowered position to the gasket application position, thus moving platen 129 and carrier base 90 upwardly to insert the insertion flange 36 at the first end 82 of carrier 66 into the corresponding portion of channel 28 (Figure 9). As best seen in Figures 10-11, cylinder 119 then moves from the retracted
25 position to the extended position and platform 88 responsively moves in a guided manner to produce a rocking motion. As the platform 88 moves in the rocking motion, the carrier 66 will move along the valve cover 20 thereby rocking the curved surface of carrier 136 along channel 28 and pushing the remainder of the gasket 32 into the corresponding portions of channel 28. The insertion of gasket 20 is best seen in Figure 12.

Having completed the installation, lift cylinder 110 is retracted into the lowered position to move carrier 66 away from the valve cover 20. Cylinder 119 is then moved into an intermediate position, wherein the carrier 66 is generally level. Cylinder 98 then moves carrier 66 from the ready position in to the load position. Clamps 72 move to the release position, thereby allowing the removal of cover 20 with gasket 32 installed.

5 While the foregoing illustrates an operative sequence of operation, it will be apparent to persons skilled in the art that the exact sequence can vary, and that such variations do not depart from the scope of the present invention. For example, the gasket applicator can be a simple hand-held interface to manually rock the gasket carrier along the cover. Alternately, the gasket carrier can be stationary while the cover is rocked along the surface of gasket
10 carrier.

It is apparent to those skilled in the art that the apparatus of the present invention may be ganged together in a back-to-back fashion. A back-to-back arrangement would facilitate the gasket installation process for installing gaskets for right and left-hand valve covers for a V-8 engine.

15 It will be apparent from the discussion above that the present invention provides a novel gasket installation apparatus by providing a gasket carrier having a curved surface which releasably receives and orients a gasket, and presents an insertion flange for insertion into a channel of a part. The carrier can be rocked relative to and along the channel to sequentially urge the gasket into the channel. The use of a gasket carrier having a curved
20 surface ensures that portions of the gasket are properly inserted into the channel. The insertion can be accomplished in a very short period of time, thereby increasing productivity while ensuring proper insertion of the gasket. Additionally, the present invention could also be used with other shapes of gaskets, including non-endless gaskets.

It will now be apparent to persons skilled in the art that the present invention can be
25 directed to apply gaskets to parts other than valve covers and cylinder heads, and that the present invention can be used for insertion of elastomeric gaskets into channels in a wide variety of parts including pumps, timing covers and other components, automotive and non-automotive alike.

WE CLAIM:

1. A method for applying an elastomeric gasket to a part having a channel extending into a face thereof for receiving and at least frictionally engaging said gasket, said method comprising the steps of:
 - 5 i) obtaining a gasket carrier having a convexly curved surface with a groove for receiving a base of said gasket, said groove being registrable with said channel;
 - ii) placing said base of said gasket in said groove;
 - iii) juxtaposing said face of said part and said gasket carrier with said gasket aligned with said channel;
 - 10 iv) moving said part and said gasket carrier toward each other for a portion of said gasket to enter said channel;
 - v) causing a relative rocking movement between said part and said gasket carrier to transfer a remainder of said gasket to said channel; and,
 - vi) separating said part and said gasket carrier.
- 15 2. A method according to claim 1 wherein:

in step iv), said part is held stationary and said curved surface of said gasket carrier is moved toward said part; and,

in step v), said part is held stationary and said relative rocking movement is carried out by said gasket carrier.
- 20 3. A method according to claim 1 wherein:

in step iv), said curved surface of said gasket carrier is held stationary and said part is moved toward said curved surface; and,

in step v), said curved surface is held stationary and said relative rocking movement is applied to said part.
- 25 4. A method according to claim 1 wherein:

in step iv), said part is held stationary and said curved surface of said gasket carrier is moved toward said part; and,

in step v), said curved surface is held stationary and said relative rocking movement is carried out by said gasket carrier.

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5. An apparatus for applying an elastomeric gasket to a part having a channel extending into a face thereof for receiving and at least frictionally engaging said gasket, said apparatus comprising:
- a gasket carrier having a convexly curved surface with a groove therein for receiving a base of said gasket;
- 5 said groove registering with said channel to feed said gasket into said channel in response to relative rocking movement between said part and said surface.
6. An apparatus as claimed in claim 5 further comprising:
- a part holder for grasping said part and presenting said channel to said gasket carrier.
7. An apparatus as claimed in claim 6 further comprising:
- 10 a driver operably connected to at least one of said part holder and said gasket carrier for effecting said relative rocking movement.
8. An apparatus according to claim 7 wherein:
- said driver is connected to said gasket carrier.
9. An apparatus according to claim 5 wherein:
- 15 said driver is connected to said part holder.
10. An apparatus according to claim 8 wherein said part holder includes:
- an opening for receiving said part;
 - an inwardly extending flange extending at least part way around said opening for abutting against said face outboard of said channel to support said part within mid opening;
- 20 and,
- at least one clamp member moveable between a load position allowing placement and removal of said part within said opening and a hold position engaging said part to hold said part within said opening and against said flange.
11. An apparatus as claimed in claim 10 wherein said driver further comprises:
- 25 a platen moveable in a longitudinal direction toward and away from said part holder;
- a base plate rockingly coupled to said platen for supporting said gasket carrier;
 - a connector for connecting said gasket carrier to said base plate;
 - first positioning means connected to said platen for moving said platen in said longitudinal direction; and,

a rocker acting between said base plate and said platen for causing said base plate and in turn said gasket carrier to effect said rocking movement relative to said part holder.

12. An apparatus as claimed in claim 11 wherein said rocker further comprises:

first and second cam plates extending from said platen respectively toward first and second ends thereof;

5 said first and second cam plates having respective first and second cam surfaces engaged by respective first and second cam followers connected to said base plate;

said first and second cam surfaces being profiled to allow opposite relative longitudinal movement of said first and second ends of said base plate while restraining lateral movement thereof;

10 an arched guide secured to and extending laterally across said base plate, said arched guide having a curvature complementary to said curved surface; and,

a slider slidable along said guide by a slider positioning means acting between said slider and said platen, to laterally position said slider relative to said guide, said slider acting in conjunction with said first and second cam plates and said first and second cam followers
15 to translate lateral movement of said slider to said rocking movement of said gasket carrier.

13. An apparatus as claimed in claim 12 wherein:

said gasket carrier is slidably connected to said base plate for lateral movement relative to said part holder; and,

said apparatus further includes a second positioning means acting between said platen
20 and said base plate to laterally slide said platen clear of said part holder for placement of said gasket in said groove.

14. An apparatus as claimed in claim 13 wherein:

said first, second and slider positioning means are fluid pressure responsive cylinders.

15. An apparatus as claimed in claim 8 wherein said driver further comprises:

25 a platen moveable in a longitudinal direction toward and away from said part holder;
a base plate rockingly coupled to said platen for supporting said gasket carrier;
a connector for connecting said gasket carrier to said base plate;

first positioning means connected to said platen for moving said platen in said longitudinal direction; and,

a rocker acting between said base plate and said platen for causing said base plate and in turn said gasket carrier to effect said rocking movement relative to said part holder.

16. An apparatus as claimed in claim 15 wherein said rocker further comprises:

first and second cam plates extending from said platen respectively toward first and second ends thereof;

5 said first and second cam plates having respective first and second cam surfaces engaged by respective first and second cam followers connected to said base plate;

said first and second cam surfaces being profiled to allow opposite relative longitudinal movement to said first and second ends of said base plate while restraining lateral movement thereof;

10 an arched guide secured to and extending laterally across said base plate, said arched guide having a curvature complementary to said curved surface; and,

a slider slidable along said guide by a slider positioning means acting between said slider and said platen, to laterally position said slider relative to said guide, said slider acting in conjunction with said first and second cam plates and said first and second cam followers
15 to translate lateral movement of said slider to said rocking movement of said gasket carrier.

17. An apparatus as claimed in claim 16 wherein:

said gasket carrier is slidably connected to said base plate for lateral movement relative to said part holder; and,

said apparatus further includes a second positioning means acting between said platen
20 and said base plate to laterally slide said platen clear of said part holder for placement of said gasket in said groove.

18. An apparatus as claimed in claim 17 wherein:

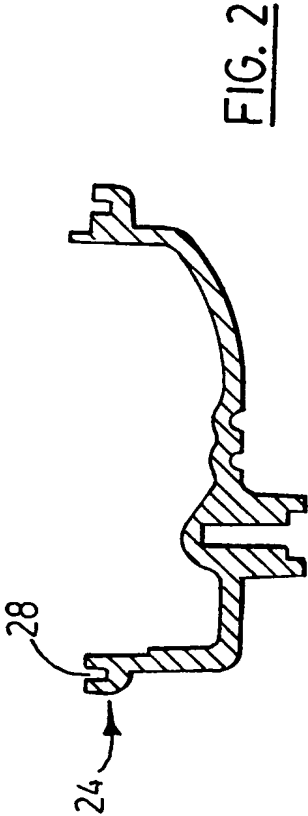
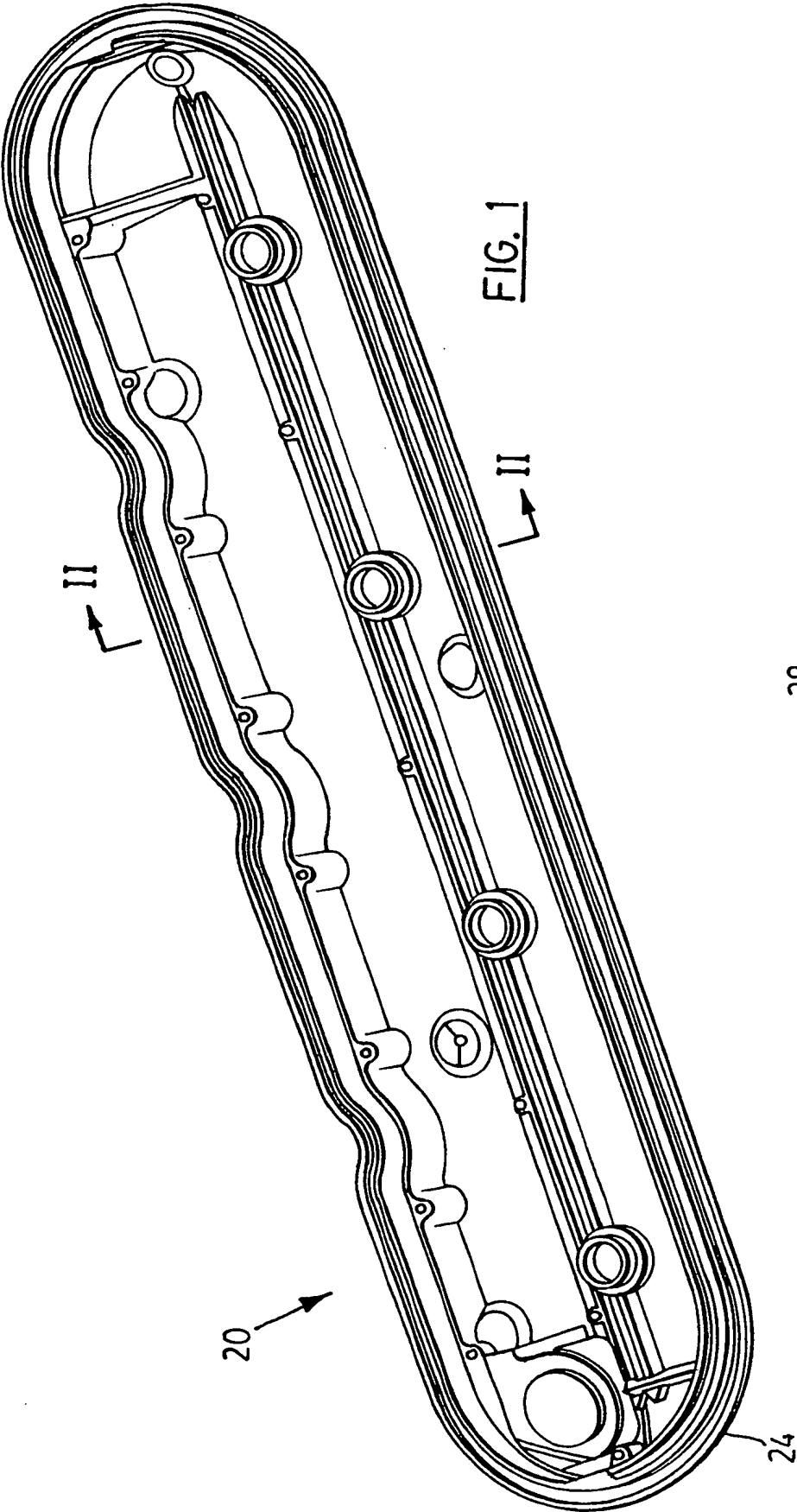
said first, second and slider positioning means are fluid pressure responsive cylinders.

19. An apparatus as claimed in claim 17 wherein:

25 said first, second and slider positioning means are pneumatic cylinders.

20. An apparatus as claimed in claim 13 wherein:

said first, second and slider positioning means are pneumatic cylinders.



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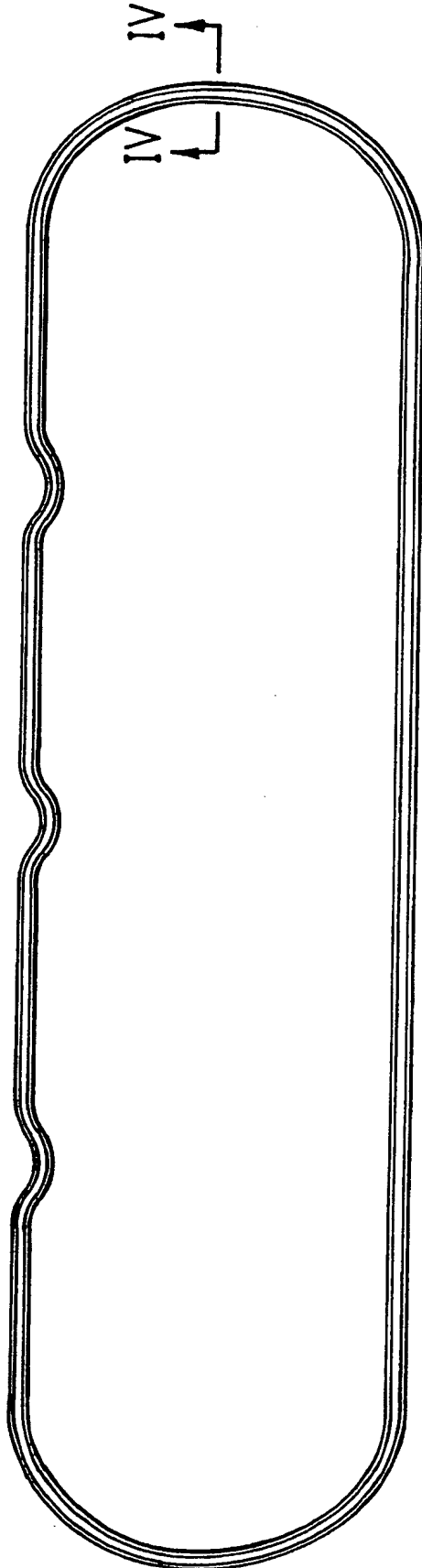


FIG. 3

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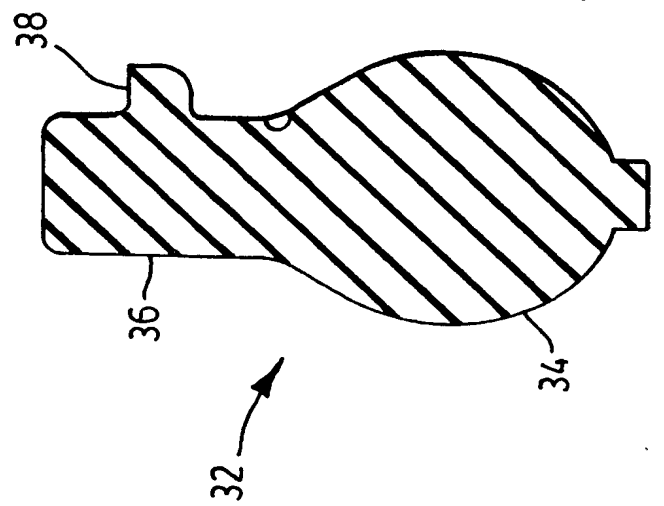
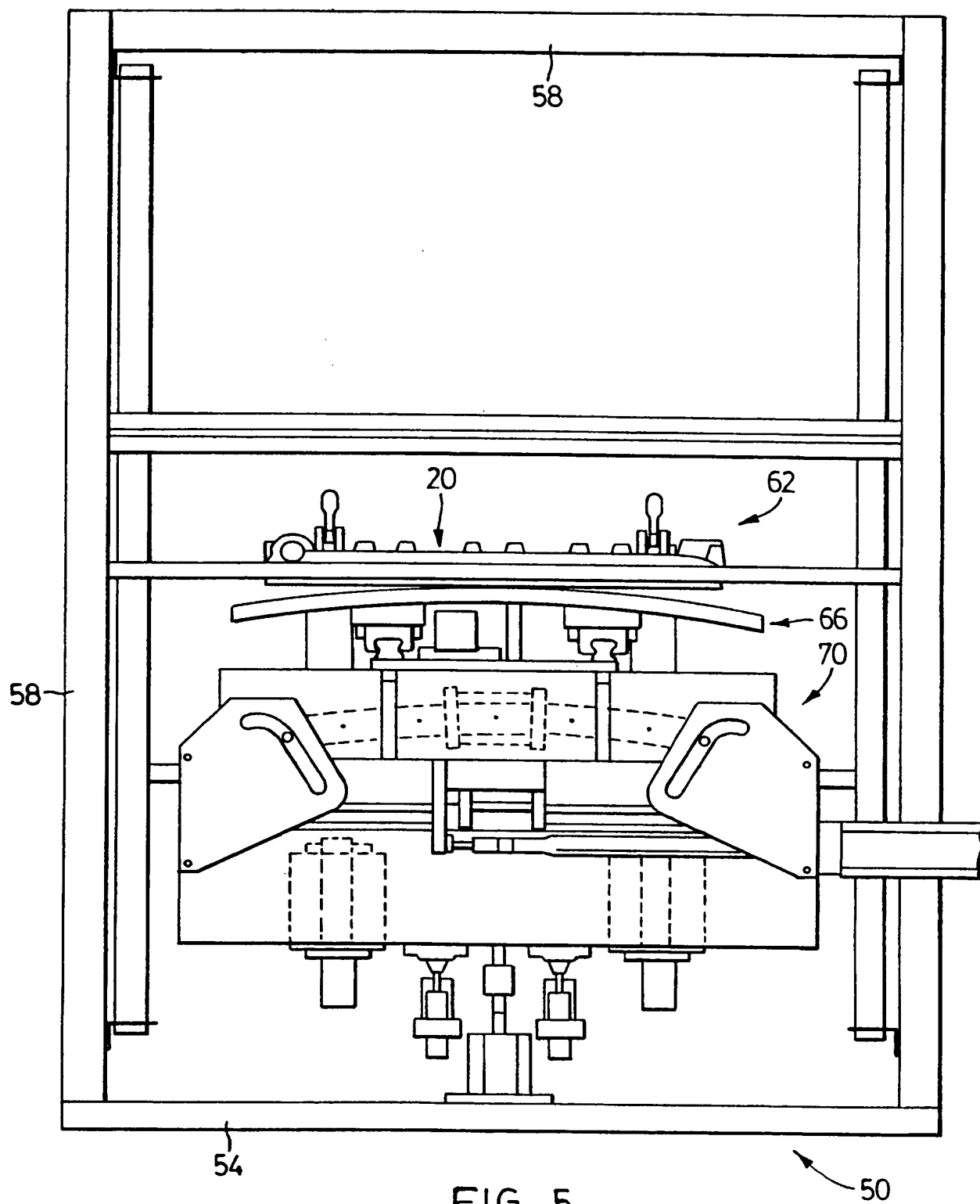


FIG. 4

FIG. 5

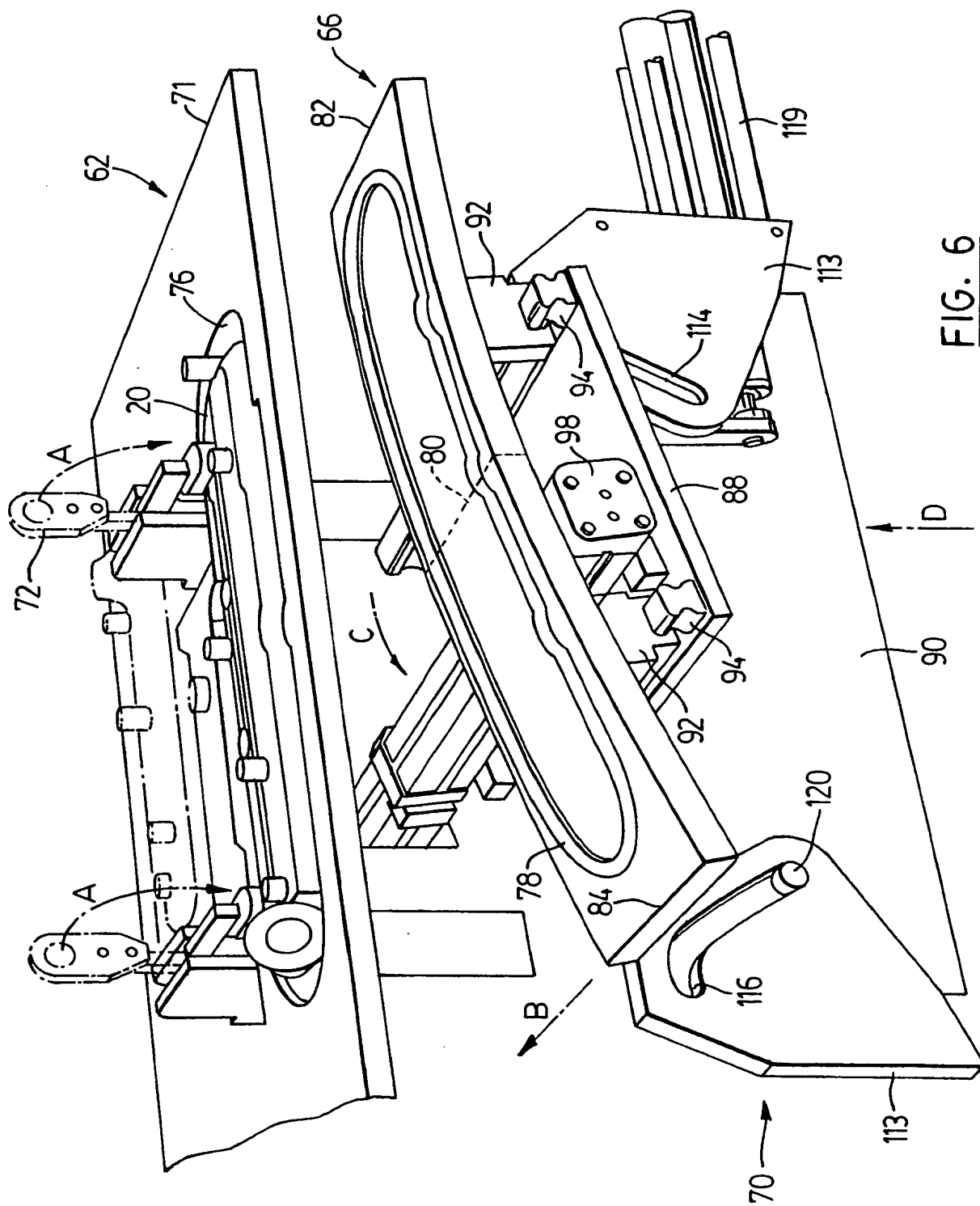


FIG. 6

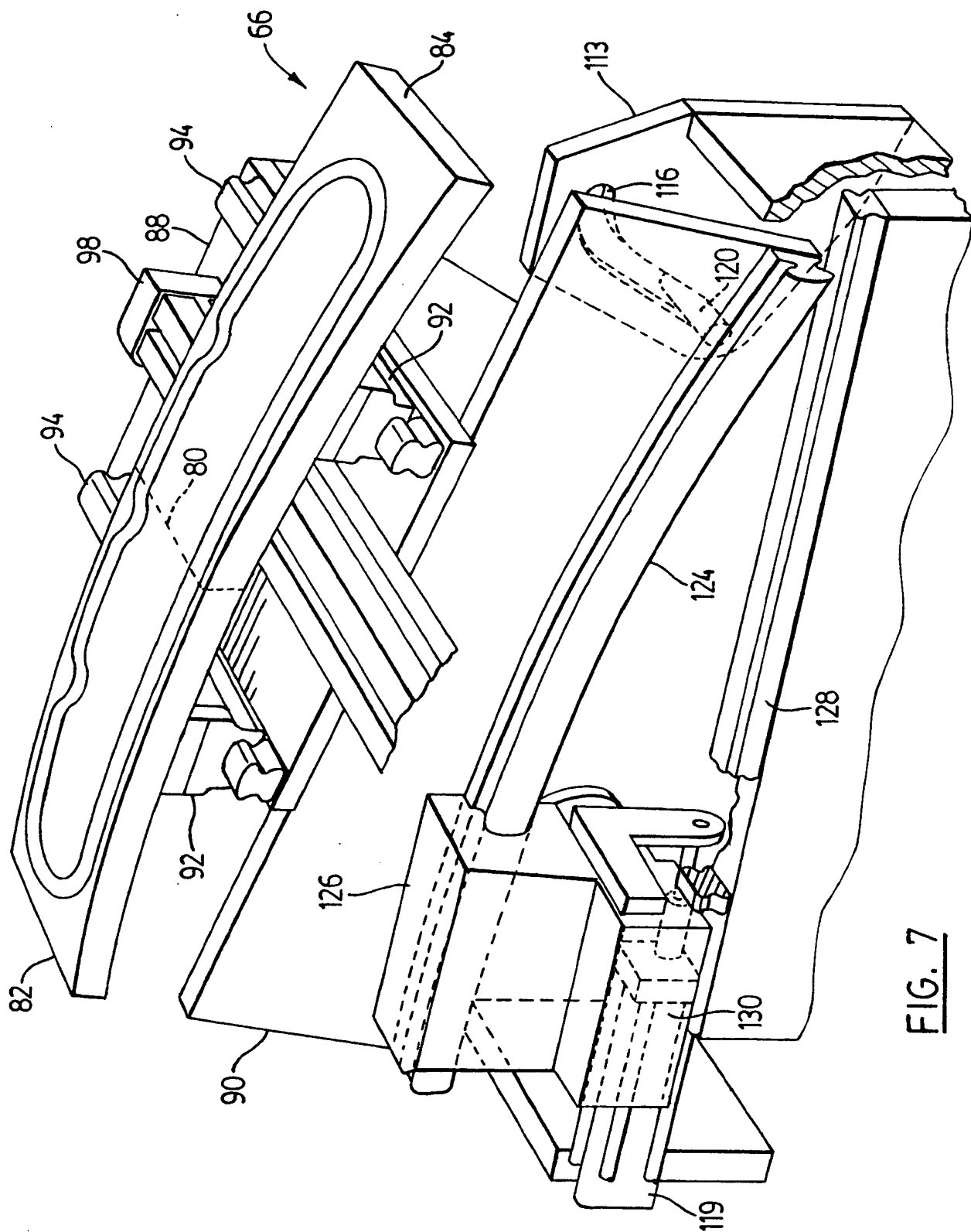


FIG. 7

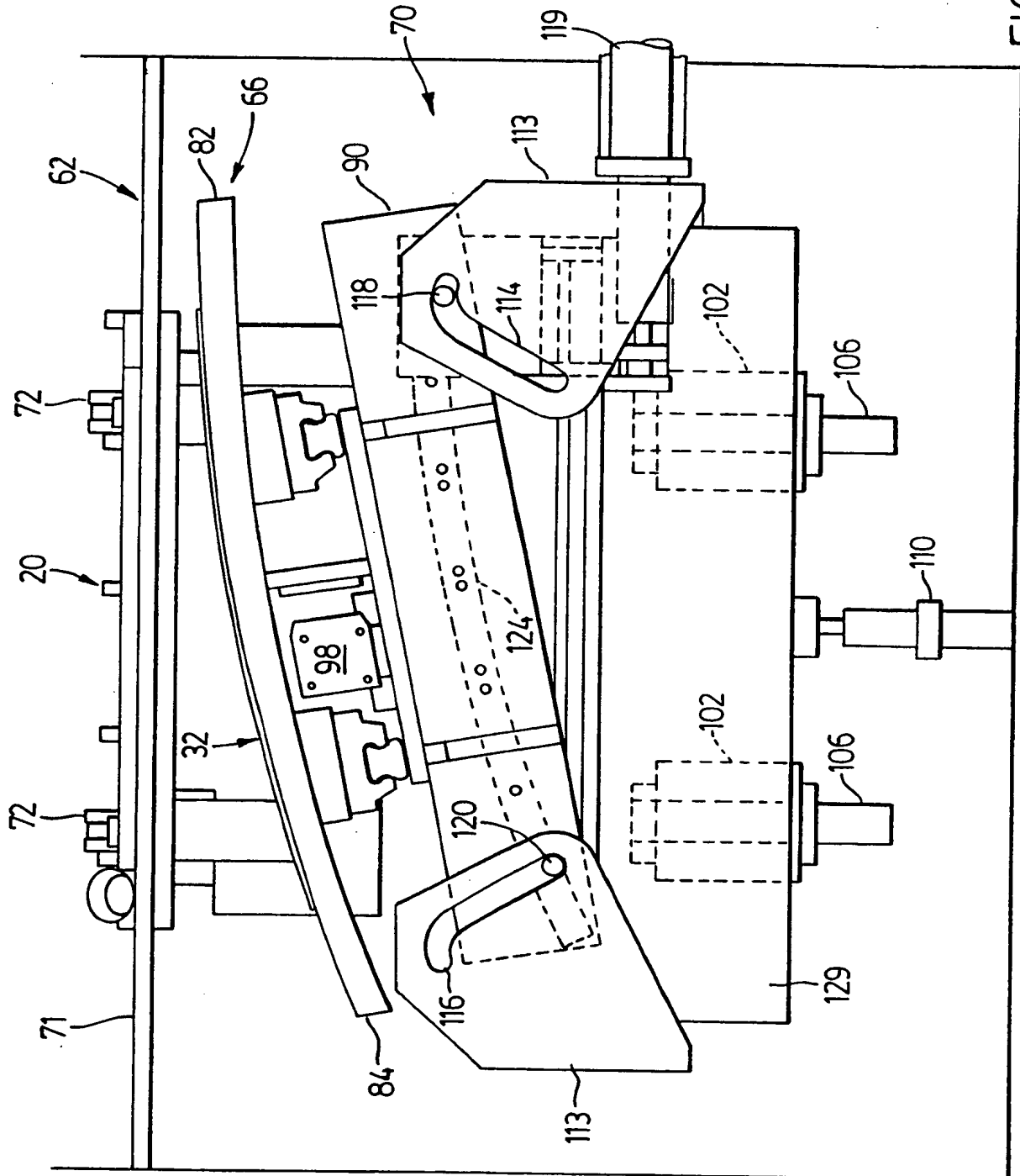


FIG. 8

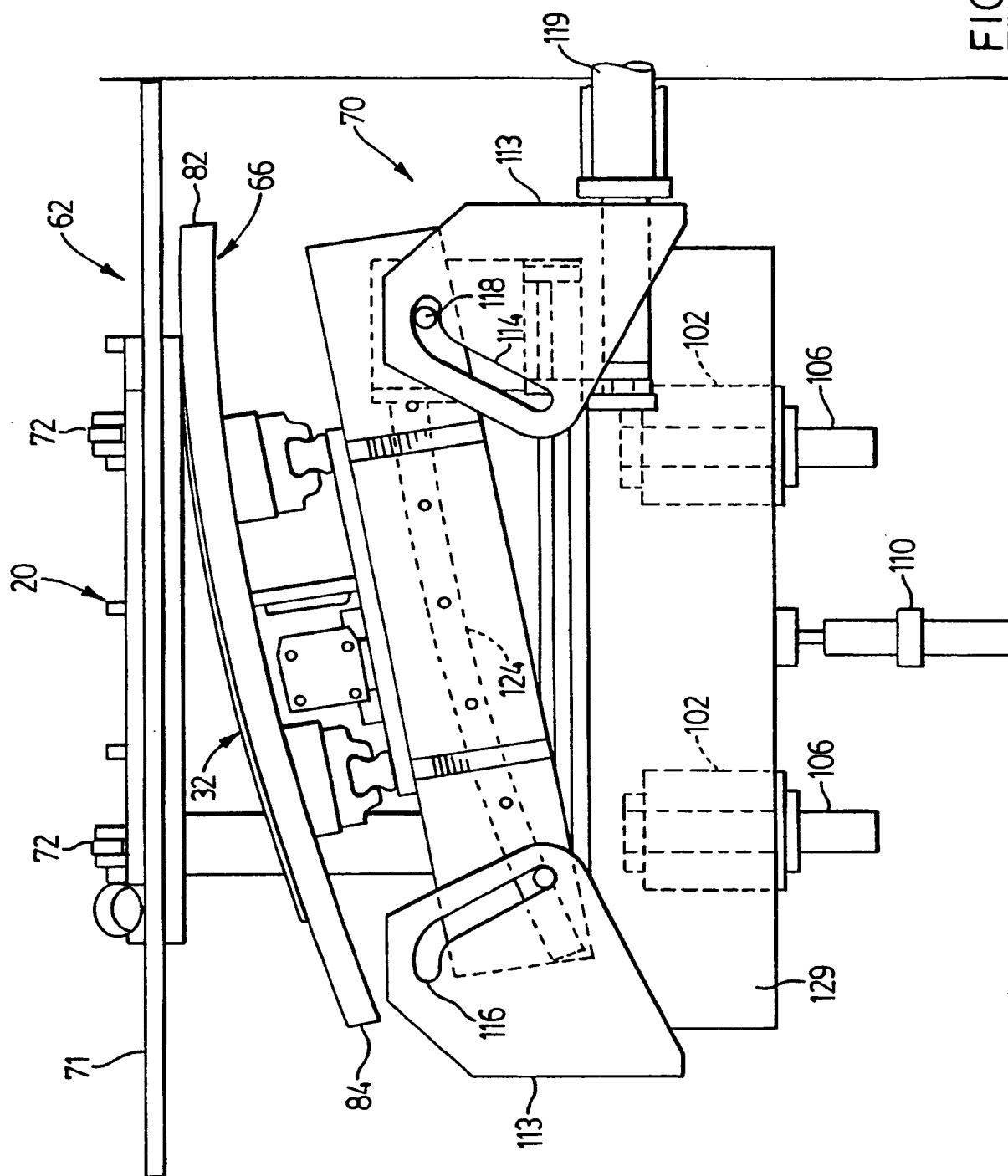


FIG. 9

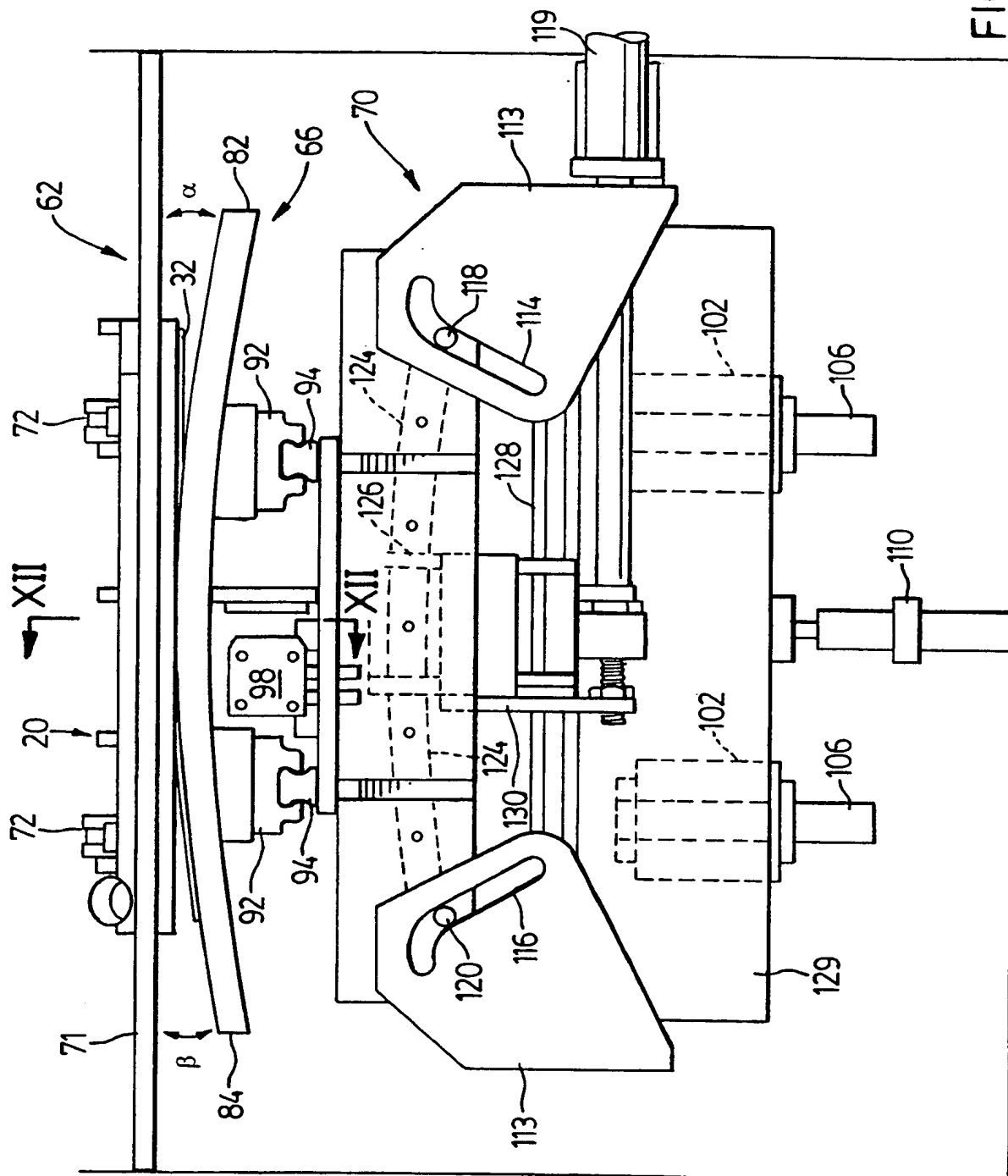


FIG. 10

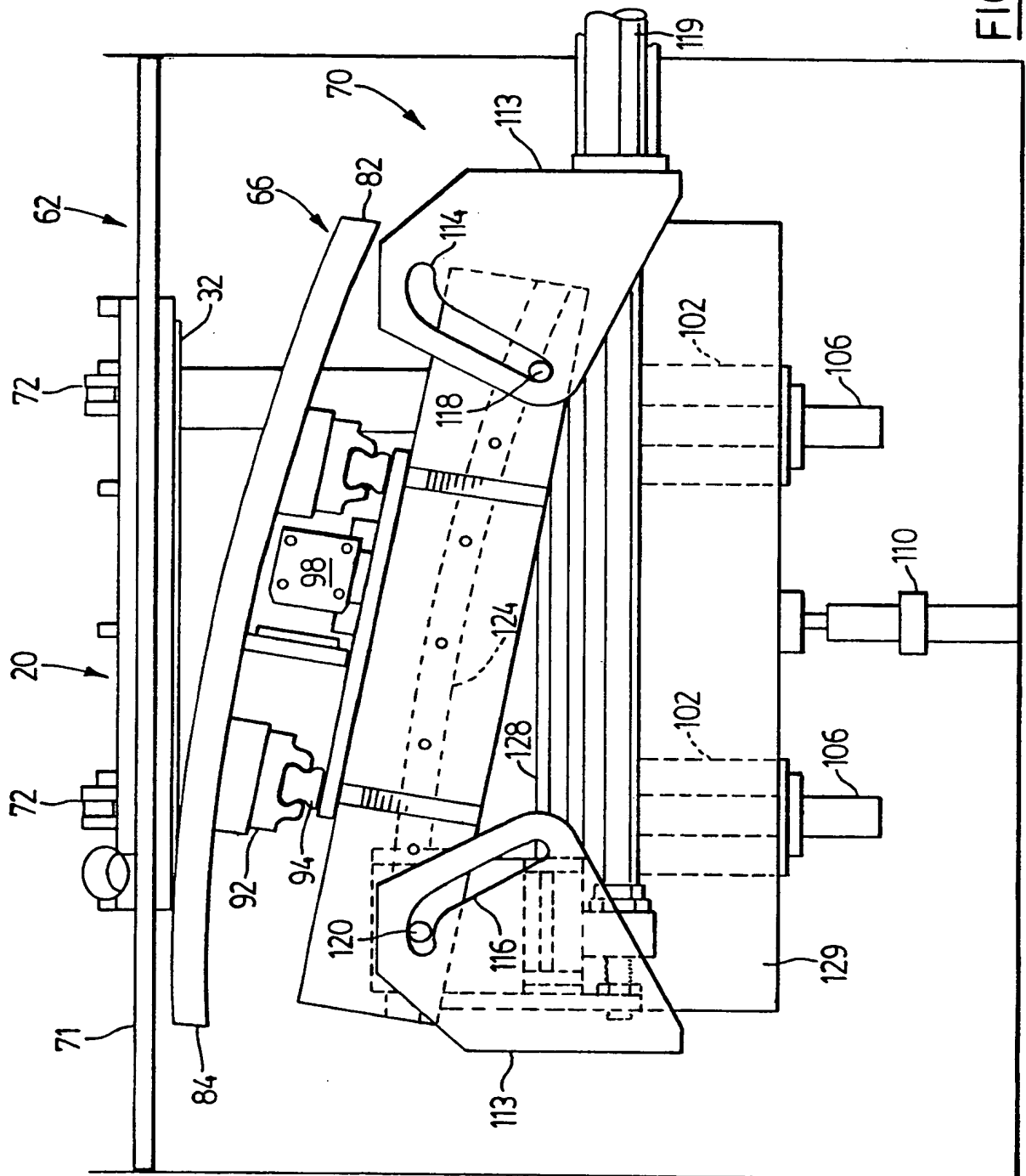


FIG. 11

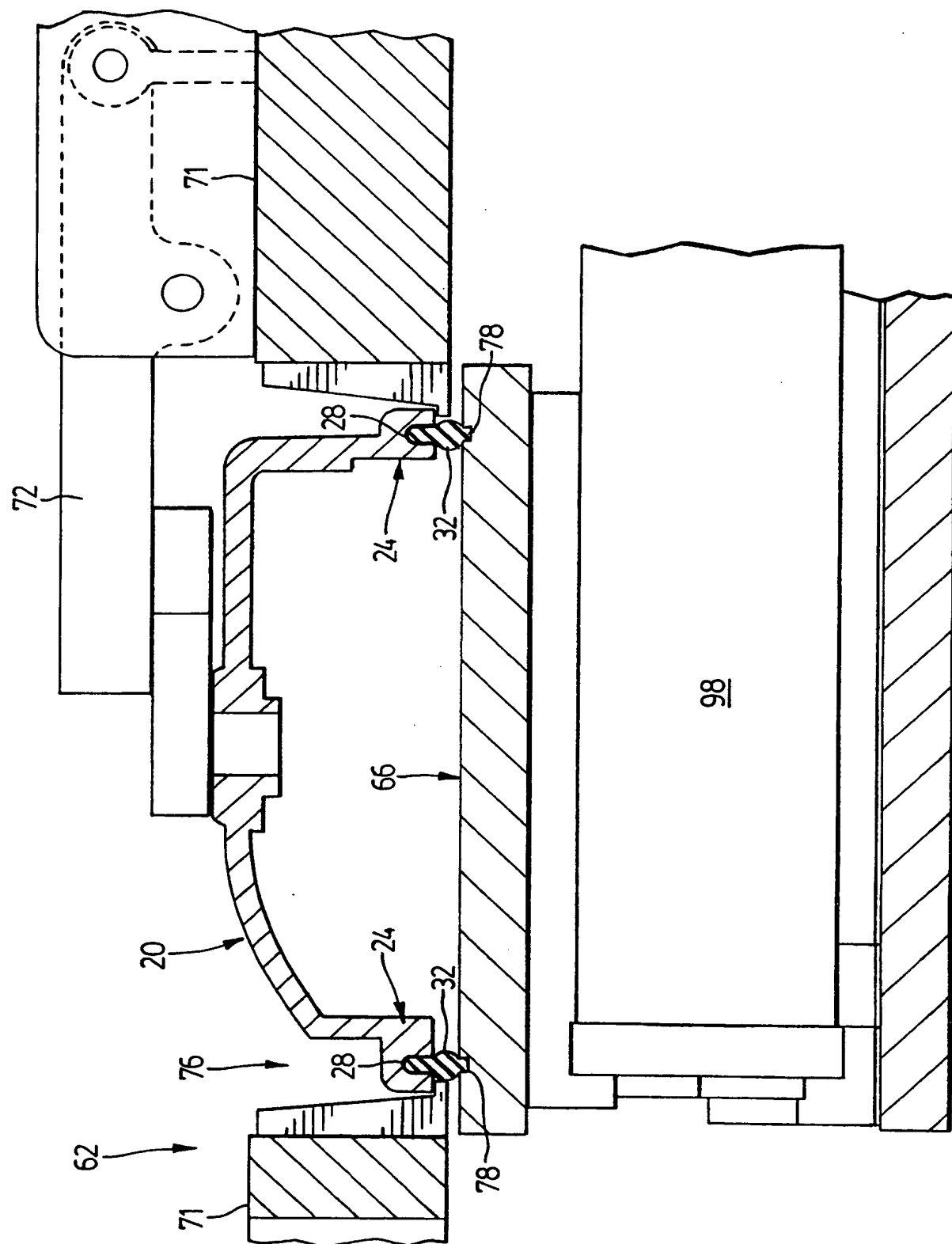


FIG. 12

INTERNATIONAL SEARCH REPORT

national Application No
PCT/CA 00/00128

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B23P19/08 F16J15/06 F16J15/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B23P F16J B25B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 37 10 651 A (FRAUNHOFER GES FORSCHUNG) 10 March 1988 (1988-03-10) abstract figures 1,2	1,5
A	PATENT ABSTRACTS OF JAPAN vol. 1997, no. 11, 28 November 1997 (1997-11-28) & JP 09 192950 A (NISSAN MOTOR CO LTD), 29 July 1997 (1997-07-29) abstract	1,5,6
A	PATENT ABSTRACTS OF JAPAN vol. 1995, no. 09, 31 October 1995 (1995-10-31) & JP 07 156026 A (NISSAN MOTOR CO LTD), 20 June 1995 (1995-06-20) abstract	1,5,6
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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"&" document member of the same patent family

Date of the actual completion of the international search

25 May 2000

Date of mailing of the international search report

07/06/2000

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INTERNATIONAL SEARCH REPORT

International Application No
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>PATENT ABSTRACTS OF JAPAN vol. 1995, no. 09, 31 October 1995 (1995-10-31) & JP 07 156027 A (NISSAN MOTOR CO LTD), 20 June 1995 (1995-06-20) abstract</p> <p>-----</p>	1, 5, 6

INTERNATIONAL SEARCH REPORT

Information on patent family members

national Application No

PCT/CA 00/00128

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 3710651 A	10-03-1988	NONE	
JP 09192950 A	29-07-1997	NONE	
JP 07156026 A	20-06-1995	NONE	
JP 07156027 A	20-06-1995	NONE	